



Liebert[®] ITA2[™] MBC

Installer/User Guide

8-kVA to 10-kVA, 60-Hz, 208/220-V

The information contained in this document is subject to change without notice and may not be suitable for all applications. While every precaution has been taken to ensure the accuracy and completeness of this document, Vertiv assumes no responsibility and disclaims all liability for damages result from use of this information or for any errors or omissions.

Refer to local regulations and building codes relating to the application, installation, and operation of this product. The consulting engineer, installer, and/or end user is responsible for compliance with all applicable laws and regulations relation to the application, installation, and operation of this product.

The products covered by this instruction manual are manufactured and/or sold by Vertiv. This document is the property of Vertiv and contains confidential and proprietary information owned by Vertiv. Any copying, use, or disclosure of it without the written permission of Vertiv is strictly prohibited.

Names of companies and products are trademarks or registered trademarks of the respective companies. Any questions regarding usage of trademark names should be directed to the original manufacturer.

Technical Support Site

If you encounter any installation or operational issues with your product, check the pertinent section of this manual to see if the issue can be resolved by following outlined procedures.

Visit <https://www.Vertiv.com/en-us/support/> for additional assistance.

TABLE OF CONTENTS

1 Important Safety Information	1
2 Product Description	3
2.1 Inside Front-panel Components	4
2.2 Rear-panel Components	5
3 Installation	7
3.1 Pre-installation Preparation	7
3.1.1 Installation Tools	7
3.2 Equipment Handling and Unpacking	7
3.3 Tower Installation	8
3.4 Rack Installation	9
3.5 Connecting Power Cables	11
3.5.1 Connecting a Single-input Configuration MBC	12
3.5.2 Connecting a Dual-input Configuration MBC	14
3.5.3 Connecting to a Single-input UPS	14
3.5.4 Connecting to a Dual-input UPS	18
3.6 Connecting Communication Cable	19

1 Important Safety Information

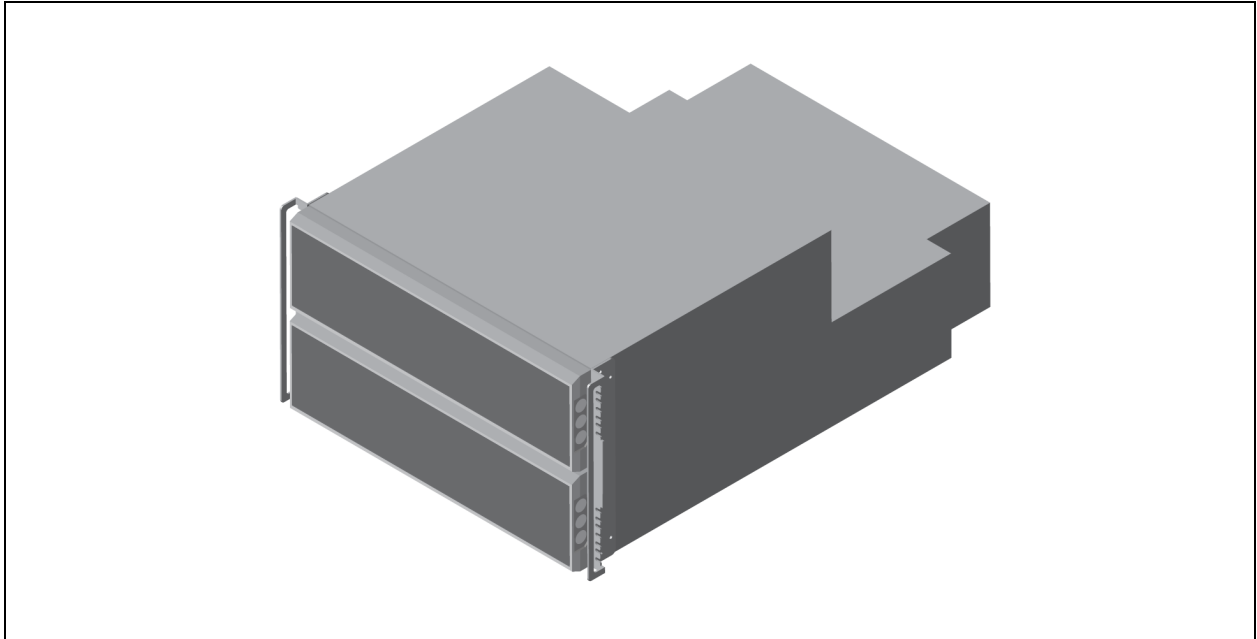
IMPORTANT! This manual contains important safety instructions that must be followed during the installation and maintenance of the UPS and batteries. Read this manual thoroughly and the safety and regulatory information, available at <https://www.vertivco.com/ComplianceRegulatoryInfo>, before attempting to install, connect to supply, or operate this UPS.

This page intentionally left blank

2 Product Description

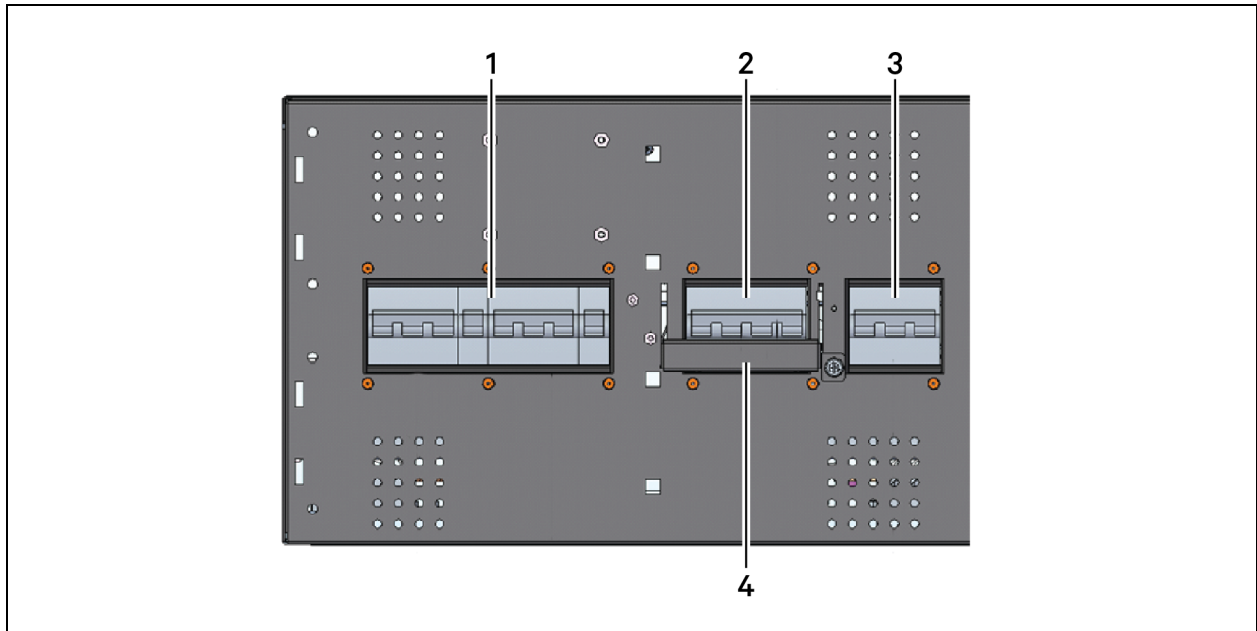
The Vertiv™ Liebert® ITA2™ MBC (Maintenance Bypass Cabinet) option isolates the UPS power module while maintaining power to the connected load.

Figure 2.1 Liebert® ITA2™ MBC



2.1 Inside Front-panel Components

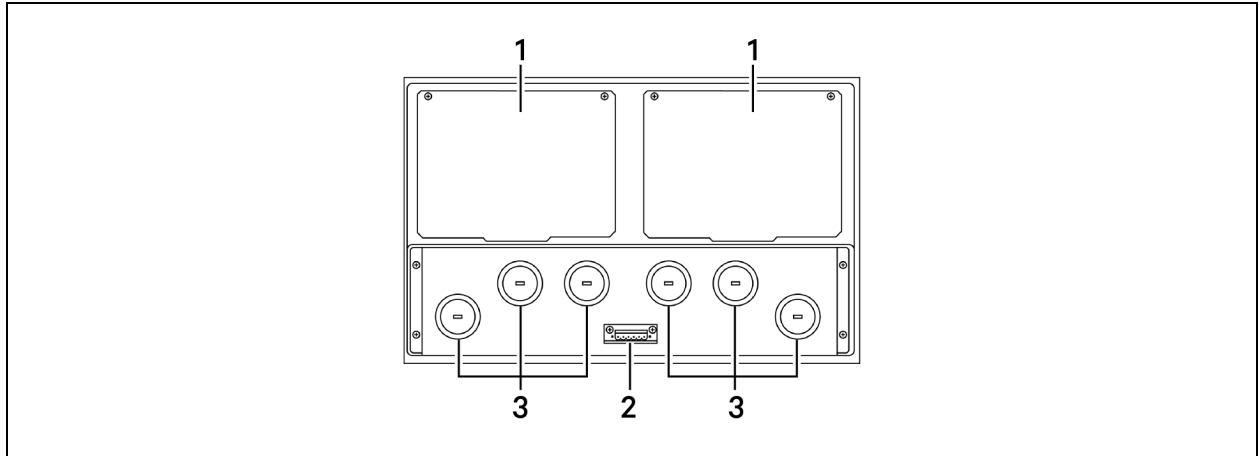
Figure 2.2 Components inside the Front Door



Item	Description
1	Rectifier input breaker (RIB)
2	Maintenance bypass breaker (MBB)
3	Maintenance isolation breaker (MIB)
4	Maintenance-bypass-breaker interlock

2.2 Rear-panel Components

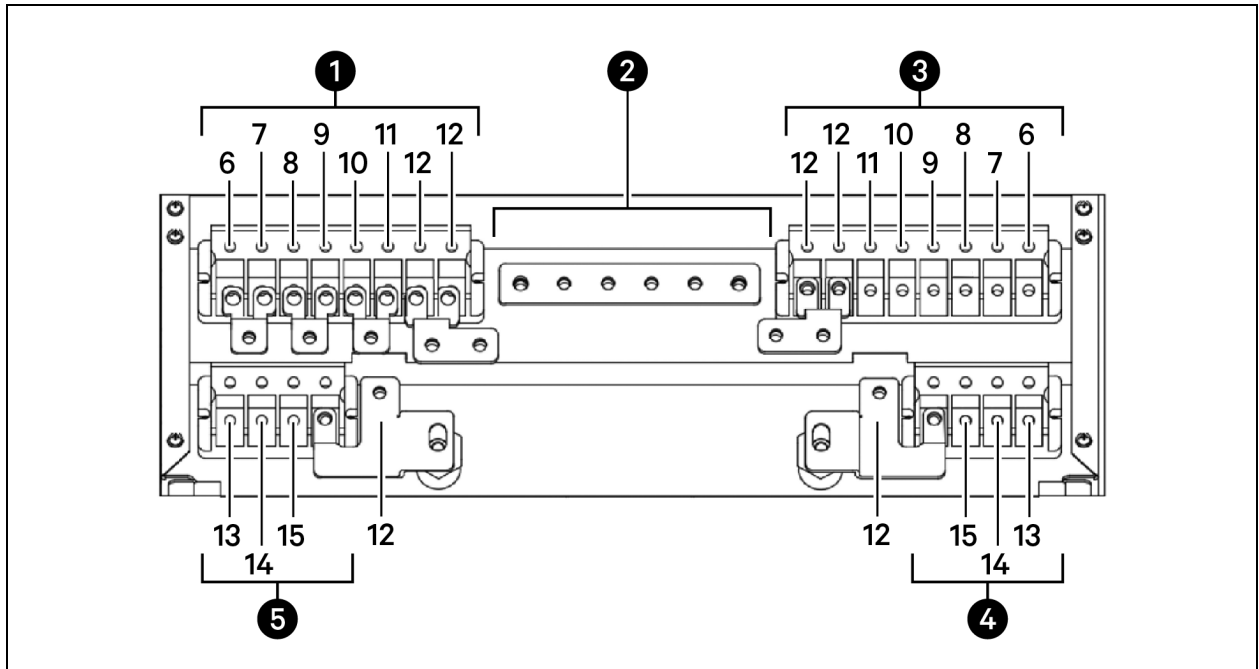
Figure 2.3 Rear Panel—POD and Conduit Box



Item	Description
1	POD-port cover
2	Dry-contact port
3	Cable-entry knockouts on conduit box

The power-distribution section is accessible when the conduit box is removed.

Figure 2.4 Rear Panel—Power-distribution Section



Item	Description
1	Main input terminal block
2	PE (ground)
3	UPS-input terminal block
4	UPS-output terminal block
5	Main output terminal block
6	rA, rectifier-input A
7	bA, bypass-input A
8	rB, rectifier-input B
9	bB, bypass-input B
10	rC, rectifier-input C
11	bC, bypass-input C
12	N, neutral
13	A, output phase A
14	B, output phase B
15	C, output phase C

3 Installation

Installation must be performed by properly-trained and qualified personnel. Do not start the UPS until after the installation is finished, and the system is commissioned by an authorized engineer.



WARNING! Risk of electrical shock. Can cause property damage, injury, and death. The unit has several circuits that are energized with high DC and AC voltages. Check for voltage with both AC and DC voltmeters before making contact and before working within the UPS. Only properly trained and qualified personnel wearing appropriate, OSHA-approved personal protective equipment (PPE) should prepare for installation, install, and maintain the equipment. When performing maintenance with any part of the equipment under power, service personnel and test equipment must stand on rubber mats.



WARNING! Risk of electrical shock. Can cause equipment damage, injury and death. Before beginning installation, verify that all external overcurrent protection devices are open (Off), and that they are locked-out and tagged appropriately to prevent activation during the installation. After the power cables are connected, the terminal block's protective cover must be reinstalled to remove the electric shock hazard.



WARNING! Risk of heavy unit falling. Improper handling can cause equipment damage, injury, and death. Exercise extreme care when handling unit cabinets and rack-mounted units to avoid equipment damage or injury to personnel.

3.1 Pre-installation Preparation

3.1.1 Installation Tools

IMPORTANT! All tools used to install and maintain the Vertiv™ Liebert® ITA2™ MBC and equipment must be insulated.

The following tools are required to properly install your maintenance-bypass cabinet:

- Torque wrench
- Adjustable wrench
- Phillips-head screwdriver

3.2 Equipment Handling and Unpacking



WARNING! Risk of heavy unit falling. Improper handling can cause equipment damage, injury, and death. Exercise extreme care when handling unit cabinets and rack-mounted units to avoid equipment damage or injury to personnel.

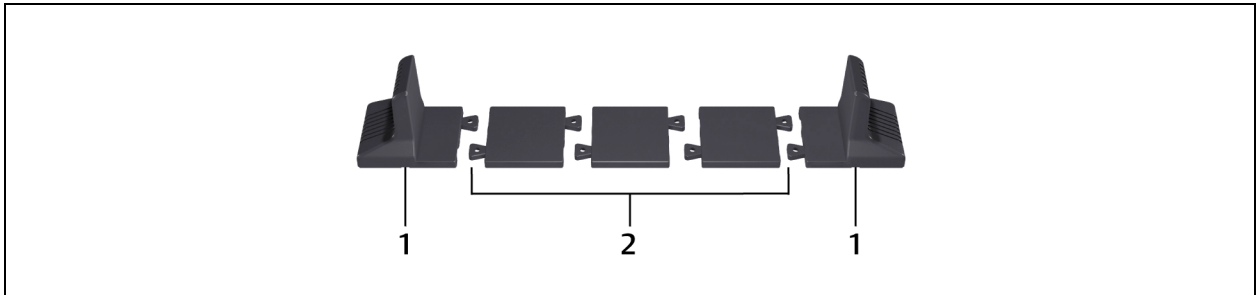
During unpacking:

- Check the accessories and model numbers against the delivery list. If you find any problem, notify your local Vertiv representative immediately.

3.3 Tower Installation

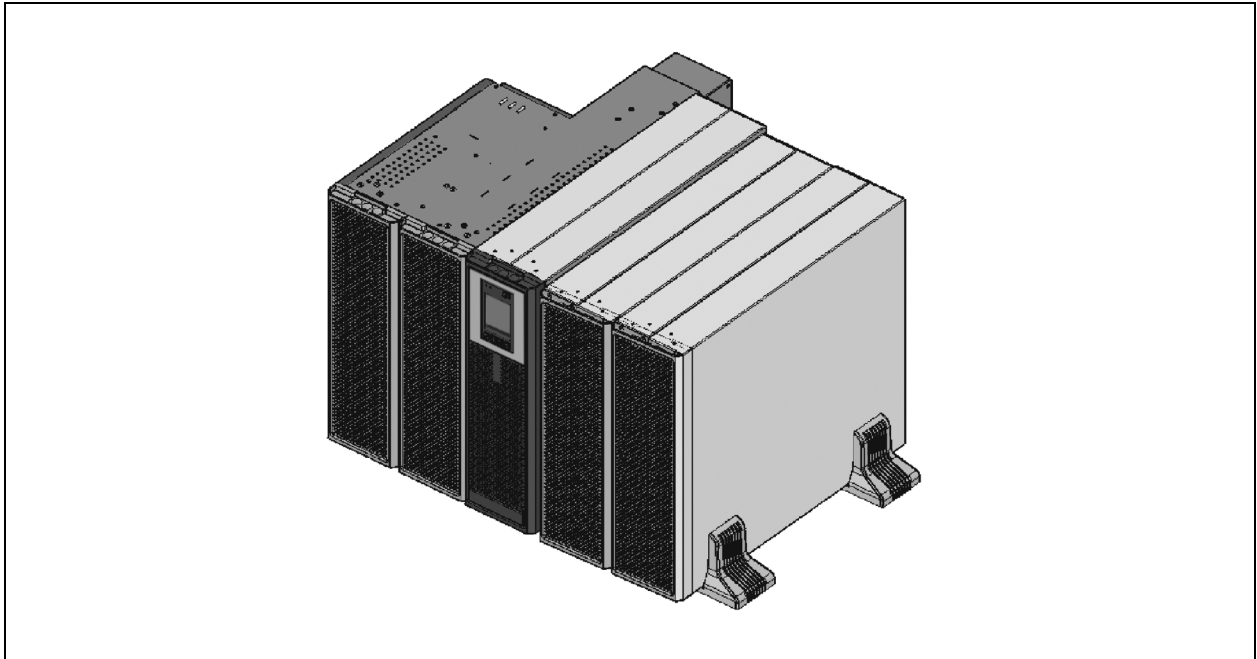
1. Take the support bases out of the accessories box.
2. Connect the spacers and the support bases as shown in **Figure 3.1** below . Each tower assembly requires 2 support-base/spacer assemblies, one in the front and one in the rear.
3. Place the UPS, battery cabinets, and the Vertiv™ Liebert® ITA2™ MBC on the 2 support-base assemblies.

Figure 3.1 Support bases



No.	Description
1	Support bases
2	Spacers with connectors

Figure 3.2 Tower-mounted Vertiv™ Liebert® ITA2™ UPS System with Battery Cabinets and Vertiv™ Liebert® ITA2™ MBC



3.4 Rack Installation

NOTICE

Risk of improper transport. Can cause damage to the UPS, MBC, or battery cabinets.

Never attempt to lift or move the UPS, MBC, or battery cabinets with the rack brackets. The brackets and screws are not meant to lift the units.

NOTICE

Risk of improper installation. Can make rack top-heavy and cause a tipping hazard.

The battery cabinets are heavier than the UPS. We recommend that you install the battery cabinets as near the bottom of the rack as possible to maintain a low center of gravity. Install the UPS above the battery cabinets. Install the MBC above the UPS.

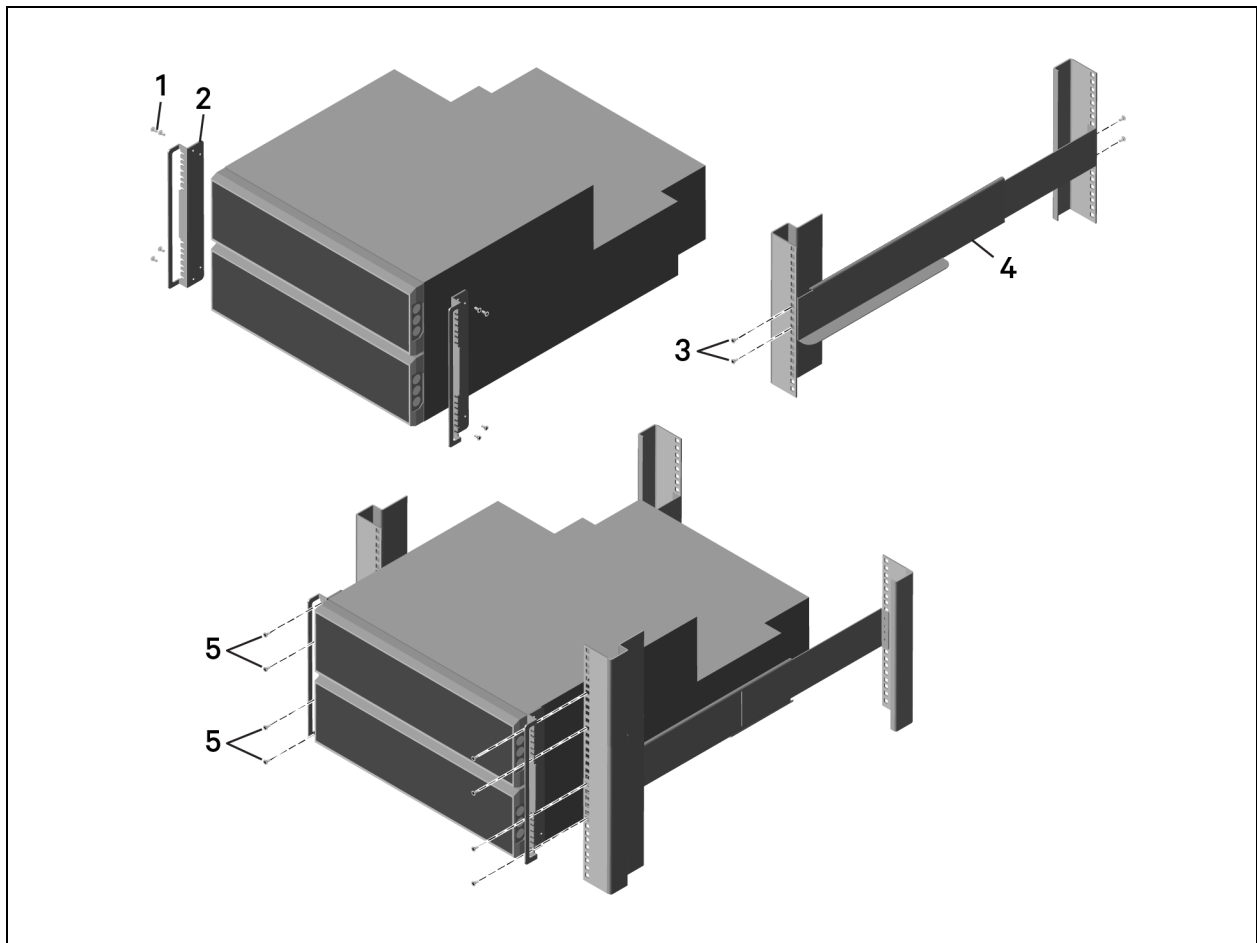
Install each unit on its own set of rack-mount guide rails. The rail kit will support the weight of a single UPS, MBC, or battery cabinet.

To mount the unit in the rack:

NOTE: Install the MBC above the UPS and battery cabinets below the UPS to facilitate cable connection.

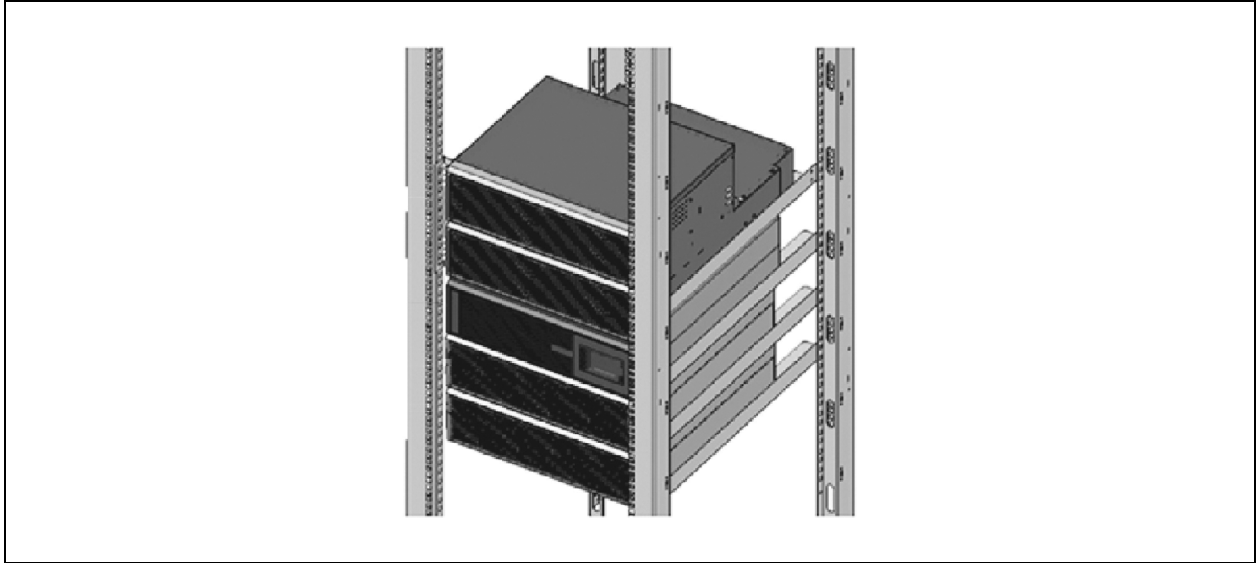
1. Referring to **Figure 3.3** on the next page, use 4 of the M4 × 10 screws on each bracket, and attach a bracket to each front corner.
2. Referring to **Figure 3.3** on the next page, mount the right and left guide rails for the MBC:
 - Adjust the length of each guide rail to the dimension of the rack.
 - Align the install holes on the ends of the rail to the square holes in the rack, and use 4 of the provided screws, 2 on each end to attach the rail to the rack.
3. Place the unit on the guide rails and push it completely into the rack along the guide rails.
4. Use M5 × 16 screws to secure the unit brackets to the rack, see **Figure 3.3** on the next page.

Figure 3.3 Guide-rail and Rack-bracket Installation



Item	Description
1	Bracket screw, 4 per bracket
2	Bracket (x2)
3	Rail screw, 4 per rail
4	Guide rail, 1 per side
5	Rack-mount screw, 4 per bracket

Figure 3.4 Rack-mounted Vertiv™ Liebert® ITA2™ UPS System with Battery Cabinets and Vertiv™ Liebert® ITA2™ MBC



3.5 Connecting Power Cables



WARNING! Risk of electrical shock. Can cause property damage, injury, and death. The unit has several circuits that are energized with high DC and AC voltages. Check for voltage with both AC and DC voltmeters before making contact and before working within the UPS. Only properly trained and qualified personnel wearing appropriate, OSHA-approved personal protective equipment (PPE) should prepare for installation, install, and maintain the equipment. When performing maintenance with any part of the equipment under power, service personnel and test equipment must stand on rubber mats.



WARNING! Risk of electrical shock. Can cause equipment damage, injury and death. Before beginning installation, verify that all external overcurrent protection devices are open (Off), and that they are locked-out and tagged appropriately to prevent activation during the installation. After the power cables are connected, the terminal block's protective cover must be reinstalled to remove the electric shock hazard.

When connecting input and output cables, follow national and local wiring regulations, take the environment into account, and refer to NFPA 70, Table 310-16. The recommended minimum cables and overcurrent protection is listed in **Table 3.1** below, and **Table 3.2** on the next page, are based upon an 86°F (30°C) ambient temperature.

Table 3.1 Currents and Wire Size—UPS Rectifier Input

Unit Rating	Maximum Current, Amps	Recommended OPD, Amp Trip	75°C THW Copper Wire (phase) Number of Cables per Phase: 1	75°C THW Copper Wire (neutral) Number of Cables: 1	75°C THW Copper Wire (Ground) Number of Cables: 1	Recommended Torque
8 kVA	24	30	8 AWG	8 AWG	10 AWG	30 lb-in.
10 kVA	37	50	6 AWG	6 AWG	10 AWG	30 lb-in.

Table 3.2 AC Currents and Wire Size—UPS Bypass Input* and Output

Unit Rating	Maximum Current, Amps	Recommended OPD, Amp Trip	75°C THW Copper Wire (phase) Number of Cables per Phase: 1	75°C THW Copper Wire (neutral) Number of Cables: 1	75°C THW Copper Wire (Ground) Number of Cables: 1	Recommended Torque
8 kVA	23	30	10 AWG	10 AWG	10 AWG	30 lb-in.
10 kVA	28	40	8 AWG	8 AWG	10 AWG	30 lb-in.
* Bypass input for dual input configurations only.						

3.5.1 Connecting a Single-input Configuration MBC



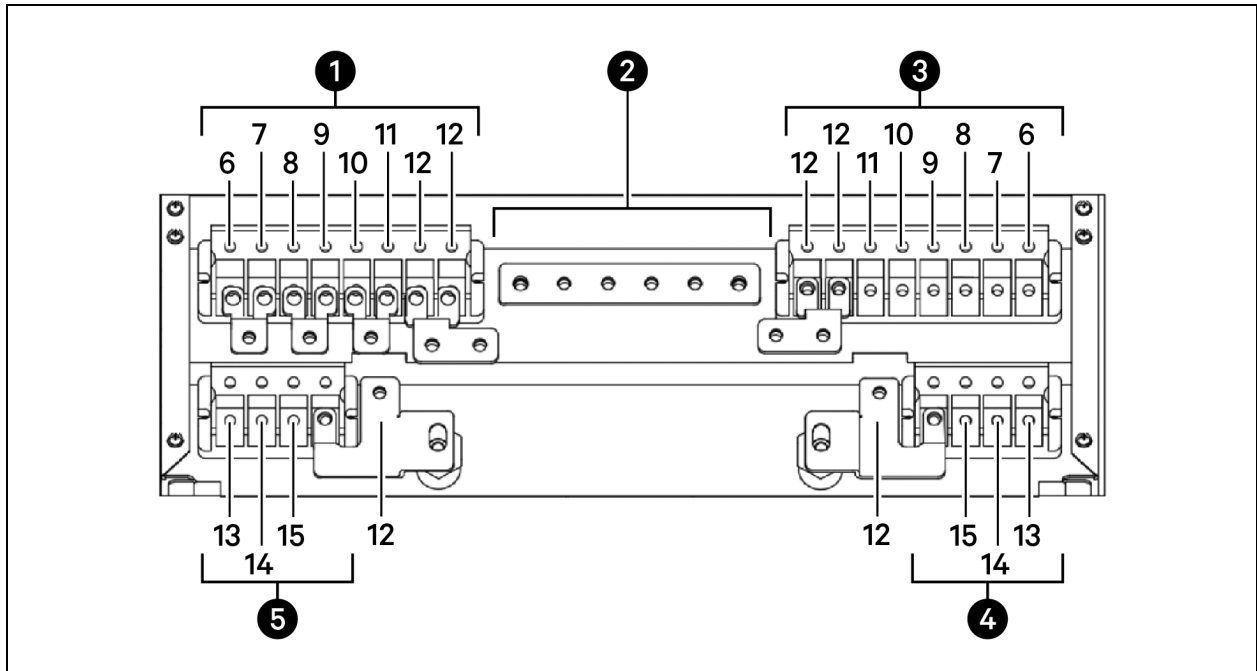
WARNING! Risk of electrical shock. Can cause equipment damage, injury and death. Before beginning installation, verify that all external overcurrent protection devices are open (Off), and that they are locked-out and tagged appropriately to prevent activation during the installation. After the power cables are connected, the terminal block’s protective cover must be reinstalled to remove the electric shock hazard.

1. Prepare for connection by removing the conduit box from the MBC, opening knockout holes, and routing cables through the conduit.

NOTE: Copper shorting busbars are factory-installed between rA and bA; rB and bB; rC and bC; and N. Leave the shorting busbars in place on the MBC main-input terminal block.

2. Referring to the "MBC Main Input terminal block" in **Figure 3.5** on the facing page, connect input cables:
 - Phase A to busbar between rA and bA
 - Phase B to busbar between rb and bB
 - Phase C to busbar between rC and bC
 - Neutral to busbar on N and N.
3. To connect the Vertiv™ Liebert® ITA2™ MBC to a dedicated output-distribution panel, refer to the "MBC Main Output terminal block" in **Figure 3.5** on the facing page, and connect output cables:
 - Phase A to A
 - Phase B to B
 - Phase C to C
 - Output neutral to N busbar
 - Safety ground to the ground (PE) bus bar
4. To connect the MBC to the UPS, refer to the appropriate procedure [Connecting to a Single-input UPS](#) on page 14, or [Connecting to a Dual-input UPS](#) on page 18.
5. Torque all customer side connections per recommendations in **Table 3.1** on the previous page, and **Table 3.2** above
6. Replace the conduit box and secure it.

Figure 3.5 Vertiv™ Liebert® ITA2™ MBC Single- and Dual-input Wiring Diagram



Item	Description
1	Main input terminal block
2	PE (ground)
3	UPS-input terminal block
4	UPS-output terminal block
5	Main output terminal block
6	rA, rectifier-input A
7	bA, bypass-input A
8	rB, rectifier-input B
9	bB, bypass-input B
10	rC, rectifier-input C
11	bC, bypass-input C
12	N, neutral
13	A, output phase A
14	B, output phase B
15	C, output phase C

3.5.2 Connecting a Dual-input Configuration MBC



WARNING! Risk of electrical shock. Can cause equipment damage, injury and death. Before beginning installation, verify that all external overcurrent protection devices are open (Off), and that they are locked-out and tagged appropriately to prevent activation during the installation. After the power cables are connected, the terminal block's protective cover must be reinstalled to remove the electric shock hazard.

1. Prepare for connection by removing the conduit box from the MBC, opening knockout holes, and routing cables through the conduit.

NOTE: Copper shorting busbars are factory-installed between rA and bA; rB and bB; rC and bC; and N. Remove the shorting busbars from the MBC main-input terminal block.

2. For rectifier input, refer to the "MBC Main Input terminal block" in **Figure 3.5** on the previous page, and connect input cables:
 - Phase A to rA.
 - Phase B to rB
 - Phase C to rC
 - Neutral to N
 - Ground to the PE busbar
3. For bypass input, refer to the "MBC Main Input terminal block" in **Figure 3.5** on the previous page, and connect input cables:
 - Phase A to bA
 - Phase B to bB
 - Phase C to bC
 - Neutral to N Ground to the PE busbar
4. To connect the MBC to the UPS, refer to the appropriate procedure [Connecting to a Single-input UPS](#) below, or [Connecting to a Dual-input UPS](#) on page 18.
5. Torque all customer side connections per recommendations in **Table 3.1** on page 11, and **Table 3.2** on page 12
6. Replace the conduit box and secure it.

3.5.3 Connecting to a Single-input UPS



WARNING! Risk of electrical shock. Can cause equipment damage, injury and death. Before beginning installation, verify that all external overcurrent protection devices are open (Off), and that they are locked-out and tagged appropriately to prevent activation during the installation. After the power cables are connected, the terminal block's protective cover must be reinstalled to remove the electric shock hazard.

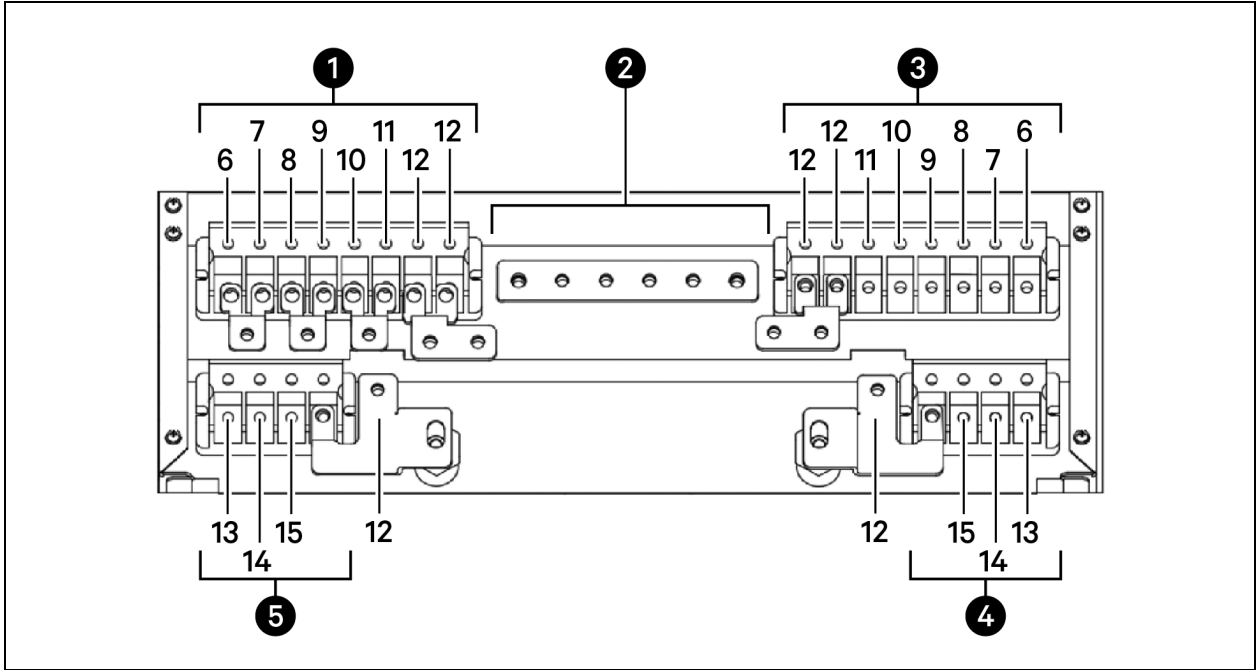
1. Prepare for connection by removing the conduit box cover from the UPS, opening knockout holes, and routing cables through the conduit.
2. Leave the shorting busbars in place on the UPS input terminal block.

3. Referring to **Figure 3.6** on the next page, and **Figure 3.7** on page 17, connect cables from the MBC's "UPS Input terminal block" to the UPS: "Input terminal block:"
 - rA to L1
 - rB to L2
 - rC to L3
 - N to N
 - Ground from PE busbar to PE ground stud (next to pA on UPS output)
4. To connect to UPS output, refer to **Figure 3.6** on the next page, and **Figure 3.7** on page 17, connect cables from the MBC's "UPS Output terminal block" to the UPS: "Output terminal block:"

NOTE: The UPS has two output terminal-block sections, "always-on" and "programmable/controllable." The always-on connections are listed first, and the programmable connections are listed inside parentheses.

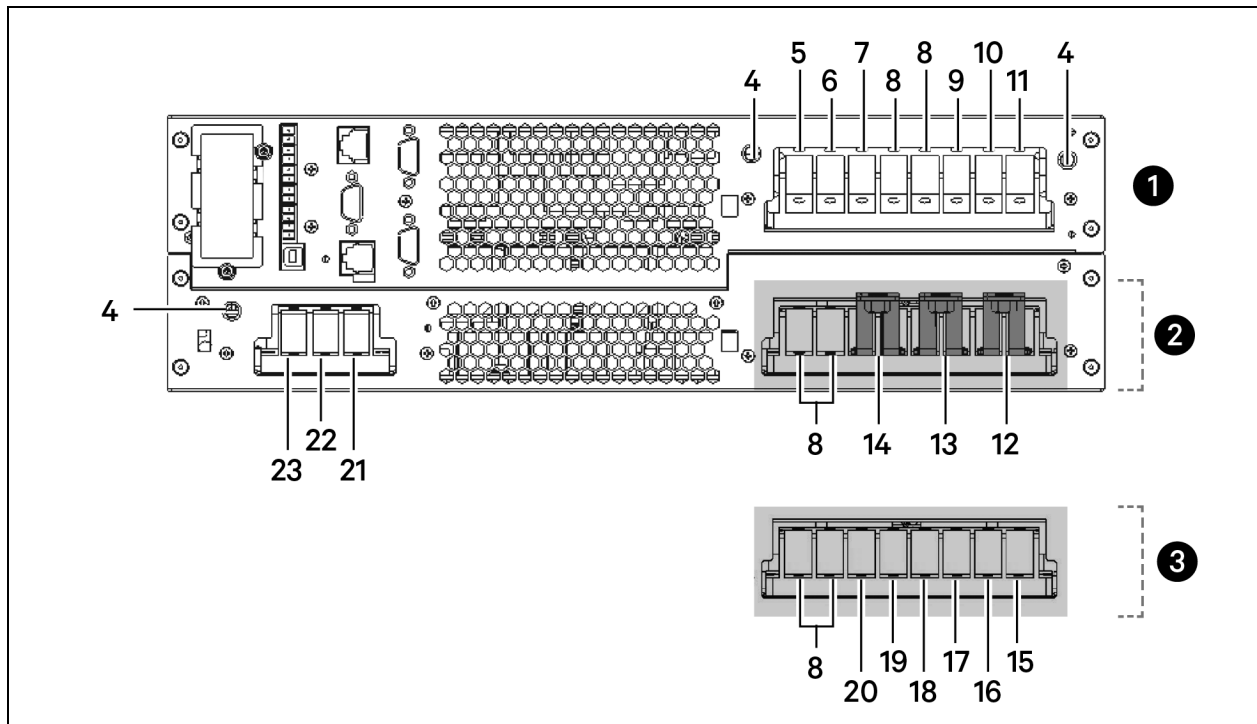
- A to A (pA)
 - B to B (pB)
 - C to C (pC)
 - N to N (N)
 - Ground from PE busbar to PE ground stud (next to C on UPS output)
5. Torque all customer side connections per recommendations in **Table 3.1** on page 11, and **Table 3.2** on page 12
 6. Replace the conduit box cover and secure it.

Figure 3.6 Vertiv™ Liebert® ITA2™ MBC Wiring Diagram



Item	Description
1	Main input terminal block
2	PE (ground)
3	UPS-input terminal block
4	UPS-output terminal block
5	Main output terminal block
6	rA, rectifier-input A
7	bA, bypass-input A
8	rB, rectifier-input B
9	bB, bypass-input B
10	rC, rectifier-input C
11	bC, bypass-input C
12	N, neutral
13	A, output phase A
14	B, output phase B
15	C, output phase C

Figure 3.7 UPS Single- and Dual-input Wiring Diagram



Item	Description
1	AC-output terminal block
2	Single-input configuration terminal block
3	Dual-input configuration terminal block
4	PE (Ground)
5	C, output phase C
6	B, output phase B
7	A, output phase A
8	N, output neutral
9	pC, output phase C
10	pB, output phase B
11	pA, output phase A
12	L1, input phase A
13	L2, input phase B
14	L3, input phase C
15	rA, rectifier input A
16	ba, bypass input A
17	rB, rectifier input B

Item	Description
18	bB, bypass input B
19	rC, rectifier input C
20	bC, bypass input C
21	BAT+, battery positive
22	BATN, battery neutral
23	BAT-, battery negative

3.5.4 Connecting to a Dual-input UPS



WARNING! Risk of electrical shock. Can cause equipment damage, injury and death. Before beginning installation, verify that all external overcurrent protection devices are open (Off), and that they are locked-out and tagged appropriately to prevent activation during the installation. After the power cables are connected, the terminal block's protective cover must be reinstalled to remove the electric shock hazard.

1. Prepare for connection by removing the conduit box cover from the UPS, opening knockout holes, and routing cables through the conduit.
2. Remove the shorting busbars from the UPS input terminal block.
3. For rectifier input, refer to **Figure 3.6** on page 16, and **Figure 3.7** on the previous page, and connect cables from the MBC's "UPS Input terminal block" to the UPS: "Input terminal block:"
 - rA to rA
 - rB to rB
 - rC to rC
 - N to N.
 - Ground from PE busbar to PE ground stud (next to pA on UPS output)
4. For bypass input, refer to **Figure 3.6** on page 16, and **Figure 3.7** on the previous page, and connect cables from the MBC's "UPS Input terminal block" to the UPS: "Input terminal block:"
 - bA to bA
 - bB to bB
 - bC to bC
 - Ground from PE busbar to PE ground stud (next to pA on UPS output)
5. To connect to UPS output, refer to **Figure 3.6** on page 16, and **Figure 3.7** on the previous page, connect cables from the MBC's "UPS Output terminal block" to the UPS: "Output terminal block:"

NOTE: The UPS has two output terminal-block sections, "always-on" and "programmable/controllable." The always-on connections are listed first, and the programmable connections are listed inside parentheses.

- A to A (pA)
 - B to B (pB)
 - C to C (pC)
 - N to N (N)
 - Ground from PE busbar to PE ground stud (next to C on UPS output)
6. Torque all customer side connections per recommendations in **Table 3.1** on page 11, and **Table 3.2** on page 12
 7. Replace the conduit box cover and secure it.

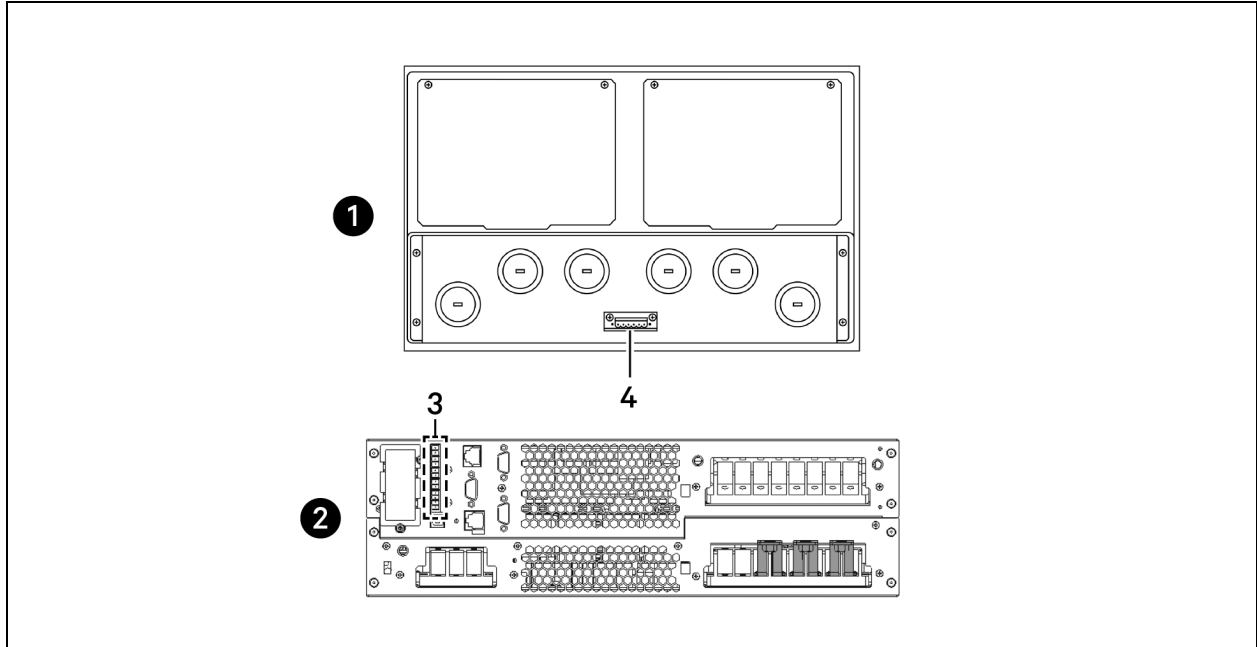
3.6 Connecting Communication Cable

The Vertiv™ Liebert® ITA2™ MBC includes a signal cable to connect to the UPS.

To connect the cable:

1. Referring to **Figure 3.8** below, connect the 6-pin connector of the signal cable to the port on the MBC.
2. Connect the each of the 2-pin connectors to the appropriate dry-contact port on the UPS according to the connector/port labels.

Figure 3.8 Communication connectors on the MBC and UPS



Item	Description
1	UPS
2	MBC
3	Dry-contact port, 1 – 4
4	Dry-contact port, 6-pin connector

This page intentionally left blank

Connect with Vertiv on Social Media



<https://www.facebook.com/vertiv/>



<https://www.instagram.com/vertiv/>



<https://www.linkedin.com/company/vertiv/>



<https://www.twitter.com/Vertiv/>



Vertiv.com | Vertiv Headquarters, 1050 Dearborn Drive, Columbus, OH, 43085, USA

© 2021 Vertiv Group Corp. All rights reserved. Vertiv™ and the Vertiv logo are trademarks or registered trademarks of Vertiv Group Corp. All other names and logos referred to are trade names, trademarks or registered trademarks of their respective owners. While every precaution has been taken to ensure accuracy and completeness here, Vertiv Group Corp. assumes no responsibility, and disclaims all liability, for damages resulting from use of this information or for any errors or omissions. Specifications, rebates and other promotional offers are subject to change at Vertiv's sole discretion upon notice.

SL-26252_REV4_06-21